

REQUEST FOR PROFESSIONAL SERVICES

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SUGGESTED CONTRACTOR:

Rosemarie Bowler, Ph.D.

C/O:

San Francisco State University, Office of Research & Sponsored Programs

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PERIOD OF PERFORMANCE: Base period of 12 months plus two 12 month option periods

SOLE SOURCE JUSTIFICATION:

The procurement of the services specified in the attached Request for Professional Services is recommended to be processed without full and open competition. The project "An Epidemiologic Health Study of Manganese Exposure in East Liverpool, Ohio" was selected by Region 5 to be funded under the Regional Applied Research Effort sponsored by the Office of Science Policy. The field work has been completed on this project. The proposed contractor, Rosemarie Bowler of San Francisco State University, conducted the field work as well as an epidemiologic health study of manganese exposure in Marietta, OH and Mt. Vernon, OH as part of a previous RARE project. More data analyses from all three study sites are needed. The proposed contractor has the data for all three study sites. The proposed contractor has established rapport with the community of East Liverpool, OH through the previous contract. This rapport is needed for communicating the study results both to individual participants and to the greater community. The proposed contractor has the capacity of conducting the additional data analyses and provide participant feedback both to individuals within the study as well as providing results of the study to the overall community. Due to proposed contractor's unique capabilities, it is recommended that this professional services contract be granted without competition.

AUTHORITY AND FAR REFERENCE

The basis for this recommendation is 41 U.S.C. 253(c)(1); FAR 6.302-1; only one responsible source.

STATEMENT OF WORK

A. Background Information

Potential neurotoxicity from airborne Manganese (Mn) exposure has been a community and risk assessment concern for more than a decade in Region 5 (e.g. OH, MI). The RARE program funded a 2009-2010 Mn health study in Marietta OH near a large industrial emitter of airborne Mn, led by Rosemarie Bowler of San Francisco State University. Mt. Vernon OH, demographically similar to Marietta but without large industrial Mn emission sources, was used as the comparison community for Marietta. Initial Marietta-Mt. Vernon comparisons generally indicate a lack of major health effect differences between the two towns. Whether this extends to East Liverpool OH, an area of much higher (up to 50-fold) outdoor air Mn concentrations is the present research question of interest, and a central reason for extending the Marietta-Mt. Vernon study.

Some of the highest chronic US residential Mn inhalation exposures are likely to have occurred in East Liverpool, OH. The proposed work is important in that either positive results (differences between East Liverpool and comparison communities) or negative results (little or no differences among communities) inform the issue of potential health effects of residential airborne Mn exposure, a recognized gap in Mn health effects literature. Therefore, either outcome can help inform the need for greater airborne Mn control. In addition, the present proposal addresses the USEPA Administrator's environmental justice priority. The poverty rate is higher in East Liverpool (25.2%) than in Marietta (16.9%), Mt. Vernon (15.6%), the State of Ohio (7.8%) or the U.S. (9.2%).

B. Purpose and Objectives

To evaluate whether long term (minimum 10 years) residential airborne Mn exposure can affect human health, this study will compare already available Marietta and Mt. Vernon adult resident results with those of East Liverpool for biomarkers (blood metals, toenails, hair), medical tests (symptoms; illnesses; Unified Parkinson's Disease Rating Scale evaluation), functional tests (mood; neuropsychological tests such as working memory and attention, verbal skills, motor dexterity/strength, visual tracking speed); and questionnaires (life style habits; work; dietary Mn). Key research questions include:

- Are blood and plasma Mn (controlled for Cd, Hg, and Pb exposure by measuring these metals in whole blood; controlled for Fe status and liver function by measuring plasma ferritin and the hepatic enzymes ALT and GGT, respectively) significantly elevated in East Liverpool adult residents vs. those in Marietta and Mt. Vernon? An additional novel diagnostic biomarker using toenails and hair shall be used to assess longer term Mn exposure (7-10 months).
- What differences in environmental and lifestyle factors may contribute to blood, hair, and toenail Mn levels in East Liverpool residents?
- Is Mn body burden associated with altered neurological and neuropsychological function, or medical symptoms and illnesses?
- Do health outcomes (e.g. neuropsychological test results) differ among the three towns?
- Can Mn exposure-effect relationships with health and illness be shown through use of a

cumulative exposure index?

C. Specific Objectives/Milestones to be Performed by the Contractor

The contractor shall obtain Mn hair sample analyses, analyze data, produce reports and manuscripts, communicate overall study results to the community of East Liverpool, and provide to the participants of the study their individual test results.

Mn hair sample analyses:

1. The hair samples were collected as part of the field study and stored. The contractor shall have the hair samples analyzed for Mn.

Analyze data: In the previous contract, the data were obtained, cleaned and preliminary analyses were conducted that explored health outcomes between East Liverpool, Marietta, and Mt. Vernon, Ohio. Further, more in depth analyses of the data are needed.

1. The contractor shall provide an analyses plan that outlines the further analyses that shall be conducted. This shall include what measures of exposure will be used (East Liverpool and Marietta), what further analyses will be conducted using all three towns, and what analyses will be conducted for town specific analyses.
2. The contractor shall explore the correlations of Mn concentrations in hair, blood and toenails in relation to the Mn air concentrations and modeling that were previously developed.

Produce reports and manuscripts

1. The contractor shall provide a plan that outlines the different manuscripts that are to be developed. These manuscripts shall correspond to the analyses plan.
2. An interim report shall be provided every six months that details what analyses have been conducted, results of the analyses, status of papers. These interim reports then should feed into the final report.
3. The contractor shall ask EPA permission to submit abstracts to meetings if using any data from East Liverpool.
4. A Final Report shall be submitted at the conclusion of this contract. This final report shall detail all the data analyses, papers that have been conducted over the course of this contract.
5. Multiple journal article suitable for submission to a peer-reviewed journal such as Environmental Health Perspectives or Neurotoxicology shall be created. The contractor shall prepare a draft for comment by the EPA. The contractor shall incorporate any EPA comments and prior to submission make sure the article has been cleared by EPA. The contractor shall be responsible for incorporating reviewer comments and for all publication charges.

Communication:

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1. The contractor shall provide to the participants of the study their individual test results. This shall be in the form of a letter that will be individualized to each study participant. The contractor shall provide to EPA a template for this letter for review and approval prior to sending out to study participants.
2. The contractor shall communicate overall study results to the community of East Liverpool by conducting a community meeting. The contractor shall consult with EPA as to date of the community meeting and shall clear with EPA any materials (e.g., powerpoint presentations, fact sheets) prior to presenting to the community.

D. Government Responsibilities

The government researchers will be responsible for obtaining EPA clearance for any journal or public reports. The government researchers will provide comments on the Interim Report within 15 days of receipt, will provide comments on the Final Report within 21 days of receipt, and will provide comments on the journal article within 21 days of receipt.